#4

## SEQUENCE LISTING

<110> Honjo, Tasuku Muramatsu, Masamichi

<120> NOVEL CYTIDINE DEAMINASE

<130> 06501-088001

<140> 09/966,880

<141> 2001-09-28

<150> PCT/JP00/01918

<151> 2000-03-28

<150> JP 11-371382

<151> 1999-12-27

<150> JP 11-178999

<151> 1999-06-24

<150> JP 11-87192

<151> 1999-03-29

<160> 36

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 2440

<212> DNA

<213> Mus musculus

<220>

<221> CDS

<222> (93)...(686)

<221> 5'UTR

<222> (1)...(92)

<221> 3'UTR

<222> (690)...(2440)

<221> misc feature

<222> (1)...(2440)

<223> n = A, T, C or G

<400> 1

ggcacgagca gcactgaagc agccttgctt gaagcaagct tcctttggcc taagactttg
agggagtcaa gaaagtcacg ctggagaccg at atg gac agc ctt ctg atg aag
Met Asp Ser Leu Leu Met Lys
1 5

caa aag aag ttt ctt tac cat ttc aaa aat gtc cgc tgg gcc aag gga Gln Lys Lys Phe Leu Tyr His Phe Lys Asn Val Arg Trp Ala Lys Gly 161

10 15 20 cgg cat gag acc tac ctc tgc tac gtg gtg aag agg aga gat agt gcc 209 Arg His Glu Thr Tyr Leu Cys Tyr Val Val Lys Arg Arg Asp Ser Ala 30 ace tee tge tea etg gae tte gge eac ett ege aac aag tet gge tge 257 Thr Ser Cys Ser Leu Asp Phe Gly His Leu Arg Asn Lys Ser Gly Cys 45 50 cac gtg gaa ttg ttg ttc cta cgc tac atc tca gac tgg gac ctg gac 305 His Val Glu Leu Leu Phe Leu Arg Tyr Ile Ser Asp Trp Asp Leu Asp 60 eeg gge egg tgt tae ege gte ace tgg tte ace tee tgg age eeg tge 353 Pro Gly Arg Cys Tyr Arg Val Thr Trp Phe Thr Ser Trp Ser Pro Cys tat gac tgt gcc cgg cac gtg gct gag ttt ctg aga tgg aac cct aac 401 Tyr Asp Cys Ala Arg His Val Ala Glu Phe Leu Arg Trp Asn Pro Asn ctc agc ctg agg att ttc acc gcg cgc ctc tac ttc tgt gaa gac cgc 449 Leu Ser Leu Arg Ile Phe Thr Ala Arg Leu Tyr Phe Cys Glu Asp Arg 110 497 aag get gag eet gag ggg etg egg aga etg eac ege get ggg gte eag Lys Ala Glu Pro Glu Gly Leu Arg Arg Leu His Arg Ala Gly Val Gln 120 125 130 atc ggg atc atg acc ttc aaa gac tat ttt tac tgc tgg aat aca ttt 545 Ile Gly Ile Met Thr Phe Lys Asp Tyr Phe Tyr Cys Trp Asn Thr Phe 140 gta gaa aat cgt gaa aga act ttc aaa gcc tgg gaa ggg cta cat gaa 593 Val Glu Asn Arg Glu Arg Thr Phe Lys Ala Trp Glu Gly Leu His Glu 155 aat tot gto ogg ota acc aga caa ott ogg ogc atc ott ttg occ ttg 641 Asn Ser Val Arg Leu Thr Arg Gln Leu Arg Arg Ile Leu Leu Pro Leu 170 175 180 tac gaa gtc gat gac ttg cga gat gca ttt cgt atg ttg gga ttt 686 Tyr Glu Val Asp Asp Leu Arg Asp Ala Phe Arg Met Leu Gly Phe 185 190 tgaaagcaac ctcctggaat gtcacacgtg atgaaatttc tctgaagaga ctggatagaa 746 aaacaaccct tcaactacat gtttttcttc ttaagtactc acttttataa gtgtaggggg 806 aaattatatg actttttaaa aaatacttga gctgcacagg accgccagag caatgatgta 866 actgagettg etgtgeaaca tegecateta etggggaaca geataaette eagaetttgg 926 gtcgtgaatg atgctctttt ttttcaacag catggaaaag catatggaga cgaccacaca 986 gtttgttaca cccaccctgt gttccttgat tcatttgaat tctcaggggt atcagtgacg 1046 gattetteta ttettteeet etaaggetea ettteagggg teettttetg acaaggteae 1106 ggggctgtcc tacagtctct gtctgagcaa tcacaagcca ttctctcaaa aacattaata 1166 ctcaggcaca tgctgtatgt tttcactgtc cgtcgtgttt ttcacatttg tatgtgaaag 1226 ggcttggggt gggatttgaa gaatgcacga tcgcctctgg gtgatttcaa taaaqqatct 1286 taaaatgcag atgaggacta cgaagaaatc actctgaaaa tgagttcacg cctcaagaag 1346

```
caaatcccct ggaaacacag actcttttc atttttaatg tcattagttt actcacagtc
                                                                   1406
                                                                   1466
ttatcaagaa gaagagttca agggttcaac ccaattttca gatcgcgtcc cttaaacatc
agtaattctg ttaaagggat caaacatcct tatttcttaa ctaactggtg ccttgctgta
                                                                   1526
gagaaaqqaq caaaqcqccc agatccaaaq tatataqtta tcataqccaq qaaccqctac
                                                                   1586
tcgttttcca ttacaaatgg caaattcttc cccgggctct cctcatagtg cctgagacgg
                                                                  1646
accacggagg tgatgaacct ccggattctc tggcccaaca cggtggaagc tctgcaaggg
                                                                  1706
cgcagagaca gaatgcggca gaaattgccc ccgagtccca actctccttt ccttgcgacc
                                                                  1766
ttgggaacaa gacttaaagg agcctgtgac ttagaaactt ctagtaatgg gtacctggga
                                                                  1826
gtcgtttgag tatggggcag tgatttattc tctgtgatgg atgccaacac ggttaaacag
                                                                  1886
aatttttagt ttttatatgt gtgtgatgct gctcccccaa attgttaact gtgtaagagg
                                                                  1946
gtggcaaaat agggaaagtg gcattcacct atagttccag cattcaggaa gctgaggcag
                                                                  2006
gaggattgta aatttgaggc cagtctgagc tgtaaggtga gaccctattt caaacaacac
                                                                  2066
agccagaatt gggttctggt aaatcatact taacaaggga aaaatgcaag acgcaagacc
                                                                  2126
gtggcaagga aatgacgctt tgcccaacga aatgtaggaa accaacatag actcccagtt
                                                                  2186
tgtccctctt tatgtctggt ctccctaaca acgatctttg ctaatgagaa aaatattaga
                                                                  2246
aaaaaatatc cctgtgcaat tatcacccag tcgccattat aatgcaatta aaaggcccac
                                                                  2306
aagaaatcct gtatacacga ccgttattta ttgtatgtaa gttgctgagg aagaggagaa
                                                                  2366
2426
                                                                  2440
aaaaaaaaa aaaa
<210> 2
<211> 198
<212> PRT
<213> Mus musculus
<400> 2
Met Asp Ser Leu Leu Met Lys Gln Lys Lys Phe Leu Tyr His Phe Lys
                                   10
Asn Val Arg Trp Ala Lys Gly Arg His Glu Thr Tyr Leu Cys Tyr Val
                               25
Val Lys Arg Arg Asp Ser Ala Thr Ser Cys Ser Leu Asp Phe Gly His
                           40
Leu Arg Asn Lys Ser Gly Cys His Val Glu Leu Leu Phe Leu Arg Tyr
Ile Ser Asp Trp Asp Leu Asp Pro Gly Arg Cys Tyr Arg Val Thr Trp
                   70
                                       75
Phe Thr Ser Trp Ser Pro Cys Tyr Asp Cys Ala Arg His Val Ala Glu
                                   90
Phe Leu Arg Trp Asn Pro Asn Leu Ser Leu Arg Ile Phe Thr Ala Arg
                               105
                                                   110
           100
Leu Tyr Phe Cys Glu Asp Arg Lys Ala Glu Pro Glu Gly Leu Arg Arg
                           120
                                               125
```

Leu His Arg Ala Gly Val Gln Ile Gly Ile Met Thr Phe Lys Asp Tyr

Phe Tyr Cys Trp Asn Thr Phe Val Glu Asn Arg Glu Arg Thr Phe Lys

Ala Trp Glu Gly Leu His Glu Asn Ser Val Arg Leu Thr Arg Gln Leu

Arg Arg Ile Leu Leu Pro Leu Tyr Glu Val Asp Asp Leu Arg Asp Ala 185

140

190

155

170

135

150

Phe Arg Met Leu Gly Phe 195 <210> 3

<211> 30 <212> DNA <213> Artificial Sequence

```
<220>
<223> Artificially synthesized primer sequence, AID138
<400> 3
                                                                         30
ggaattcgcc atggacagcc ttctgatgaa
<210> 4
<211> 30
<212> DNA
<213> Artificial Sequence
<220>
<223> Artificially synthesized primer sequence, AID161
<400> 4
                                                                         30
gccgctcgag tcaaaatccc aacatacgaa
<210> 5
<211> 25
<212> DNA
<213> Artificial Sequence
<220>
<223> Artificially synthesized primer sequence, AID118
<400> 5
                                                                         25
ggctgaggtt agggttccat ctcag
<210> 6
<211> 25
<212> DNA
<213> Artificial Sequence
<220>
<223> Artificially synthesized primer sequence, AID119
<400> 6
gagggagtca agaaagtcac gctgg
                                                                         25
<210> 7
<211> 2818
<212> DNA
<213> Homo sapiens
<220>
<221> CDS
<222> (80)...(673)
```

<221> 5'UTR <222> (1)...(79) <221> 3'UTR <222> (677)...(2818) <400> 7 agagaaccat cattaattga agtgagattt ttctggcctg agacttgcag ggaggcaaga 60 agacactetg gacaceact atg gac age etc ttg atg aac egg agg aag ttt 112 Met Asp Ser Leu Leu Met Asn Arg Arg Lys Phe ctt tac caa ttc aaa aat gtc cgc tgg gct aag ggt cgg cgt gag acc 160 Leu Tyr Gln Phe Lys Asn Val Arg Trp Ala Lys Gly Arg Arg Glu Thr 208 tac ctg tgc tac gta gtg aag agg cgt gac agt gct aca tcc ttt tca Tyr Leu Cys Tyr Val Val Lys Arg Arg Asp Ser Ala Thr Ser Phe Ser 30 ctg gac ttt ggt tat ctt cgc aat aag aac ggc tgc cac gtg gaa ttg 256 Leu Asp Phe Gly Tyr Leu Arg Asn Lys Asn Gly Cys His Val Glu Leu ctc ttc ctc cqc tac atc tcg gac tgg gac cta gac cct ggc cgc tgc 304 Leu Phe Leu Arg Tyr Ile Ser Asp Trp Asp Leu Asp Pro Gly Arg Cys tac ege gtc acc tgg ttc acc tcc tgg agc ccc tgc tac gac tgt gcc 352 Tyr Arg Val Thr Trp Phe Thr Ser Trp Ser Pro Cys Tyr Asp Cys Ala 80 cga cat gtg gcc gac ttt ctg cga ggg aac ccc aac ctc agt ctg agg 400 Arg His Val Ala Asp Phe Leu Arg Gly Asn Pro Asn Leu Ser Leu Arg 95 100 105 atc ttc acc gcg cgc ctc tac ttc tgt gag gac cgc aag gct gag ccc 448 Ile Phe Thr Ala Arg Leu Tyr Phe Cys Glu Asp Arg Lys Ala Glu Pro 110 gag ggg ctg cgg ctg cac cgc gcc ggg gtg caa ata gcc atc atg 496 Glu Gly Leu Arg Arg Leu His Arg Ala Gly Val Gln Ile Ala Ile Met 125 acc ttc aaa gat tat ttt tac tgc tgg aat act ttt gta gaa aac cat 544 Thr Phe Lys Asp Tyr Phe Tyr Cys Trp Asn Thr Phe Val Glu Asn His 150 gaa aga act ttc aaa gcc tgg gaa ggg ctg cat gaa aat tca gtt cgt 592 Glu Arg Thr Phe Lys Ala Trp Glu Gly Leu His Glu Asn Ser Val Arg 165 ctc tcc aga cag ctt cgg cgc atc ctt ttg ccc ctg tat gag gtt gat 640 Leu Ser Arg Gln Leu Arg Arg Ile Leu Leu Pro Leu Tyr Glu Val Asp 175 180

gac tta cga gac gca ttt cgt act ttg gga ctt tgatagcaac ttccaggaat

## Asp Leu Arg Asp Ala Phe Arg Thr Leu Gly Leu 190 195

gtcacacacg	atgaaatatc	tctgctgaag	acagtggata	aaaaacagtc	cttcaagtct	753
tctctgtttt	tattcttcaa	ctctcacttt	cttagagttt	acagaaaaaa	tatttatata	813
cgactcttta	aaaagatcta	tgtcttgaaa	atagagaagg	aacacaggtc	tggccaggga	873
cgtgctgcaa	ttggtgcagt	tttgaatgca	acattgtccc	ctactgggaa	taacagaact	933
gcaggacctg	ggagcatcct	aaagtgtcaa	cgtttttcta	tgacttttag	gtaggatgag	993
agcagaaggt	agatcctaaa	aagcatggtg	agaggatcaa	atgtttttat	atcaacatcc	1053
tttattattt	gattcatttg	agttaacagt	ggtgttagtg	atagatttt	ctattcttt	1113
cccttgacgt	ttactttcaa	gtaacacaaa	ctcttccatc	aggccatgat	ctataggacc	1173
tcctaatgag	agtatctggg	tgattgtgac	cccaaaccat	ctctccaaag	cattaatatc	1233
caatcatgcg	ctgtatgttt	taatcagcag	aagcatgttt	ttatgtttgt	acaaaagaag	1293
attgttatgg	gtggggatgg	aggtatagac	catgcatggt	caccttcaag	ctactttaat	1353
aaaggatctt	aaaatgggca	ggaggactgt	gaacaagaca	ccctaataat	gggttgatgt	1413
ctgaagtagc	aaatcttctg	gaaacgcaaa	ctcttttaag	gaagtcccta	atttagaaac	1473
acccacaaac	ttcacatatc	ataattagca	aacaattgga	aggaagttgc	ttgaatgttg	1533
gggagaggaa	aatctattgg	ctctcgtggg	tctcttcatc	tcagaaatgc	caatcaggtc	1593
aaggtttgct	acattttgta	tgtgtgtgat	gcttctccca	aaggtatatt	aactatataa	1653
gagagttgtg	acaaaacaga	atgataaagc	tgcgaaccgt	ggcacacgct	catagttcta	1713
gctgcttggg	aggttgagga	gggaggatgg	cttgaacaca	ggtgttcaag	gccagcctgg	1773
gcaacataac	aagatcctgt	ctctcaaaaa	aaaaaaaaa	aaaaagaaag	agagaggcc	1833
gggcgtggtg	gctcacgcct	gtaatcccag	cactttggga	ggccgagccg	ggcggatcac	1893
ctgtggtcag	gagtttgaga	ccagcctggc	caacatggca	aaaccccgtc	tgtactcaaa	1953
atgcaaaaat	tagccaggcg	tggtagcagg	cacctgtaat	cccagctact	tgggaggctg	2013
aggcaggaga	atcgcttgaa	cccaggaggt	ggaggttgca	gtaagctgag	atcgtgccgt	2073
tgcactccag	cctgggcgac	aagagcaaga	ctctgtctca	gaaaaaaaaa	aaaaaagag	2133
agagagag	aaagagaaca	atatttggga	gagaaggatg	gggaagcatt	gcaaggaaat	2193
tgtgctttat	ccaacaaaat	gtaaggagcc	aataagggat	ccctatttgt	ctcttttggt	2253
		tgtctttgac				2313
		caacccttgc				2373
		tttaatctta				2433
		ttatattta				2493
		atattgaaat				2553
		aacgtatgta				2613
gccatttctc	ttgattttta	gtaaactttt	atgacagcaa	atttgcttct	ggctcacttt	2673
caatcagtta	aataaatgat	aaataatttt	ggaagctgtg	aagataaaat	accaaataaa	2733
ataatataaa	agtgatttat	atgaagttaa	aataaaaaat	cagtatgatg	gaataaactt	2793
gaaaaaaaa	aaaaaaaaa	aaaaa				2818

<210> 8

<211> 198

<212> PRT

<213> Homo sapiens

## <400> 8

 Met
 Asp
 Ser
 Leu
 Leu
 Met
 Asn
 Arg
 Arg
 Lys
 Phe
 Leu
 Tyr
 Gln
 Phe
 Lys
 Lys
 Lys
 Arg
 Arg</th

```
85
                                    90
Phe Leu Arg Gly Asn Pro Asn Leu Ser Leu Arg Ile Phe Thr Ala Arg
            100
                                105
Leu Tyr Phe Cys Glu Asp Arg Lys Ala Glu Pro Glu Gly Leu Arg Arg
                            120
                                               125
Leu His Arg Ala Gly Val Gln Ile Ala Ile Met Thr Phe Lys Asp Tyr
                        135
                                           140
Phe Tyr Cys Trp Asn Thr Phe Val Glu Asn His Glu Arg Thr Phe Lys
                    150
                                        155
Ala Trp Glu Gly Leu His Glu Asn Ser Val Arg Leu Ser Arg Gln Leu
                                    170
Arg Arg Ile Leu Leu Pro Leu Tyr Glu Val Asp Asp Leu Arg Asp Ala
                                185
Phe Arg Thr Leu Gly Leu
        195
<210> 9
<211> 5514
<212> DNA
<213> Homo sapiens
<220>
<221> intron
<222> (1)...(1031)
<221> exon
<222> (1032)...(1118)
<221> intron
<222> (1119)...(5514)
<400> 9
acagacgaat acatggtcca agctagggct attgatttga aaatcatcaa ggtatagatg
                                                                      60
                                                                     120
gtatcaaagg cttgaggcag gaagagagca gagaccctag ctgcattgct tagcattgca
tccctagcac ctggcatagt ttccattaac agtaggcatg aagtatctac tcagtgaata
                                                                     180
aatagaatgc atatgggcta cagtaggaga gagaaataaa atctttaata gaccaagttc
                                                                     240
tatgagagca caaaattaaa gtcttttatt tgaagatctt agcctgtttt ccaaattcag
                                                                     300
tgcagccagt tagacactga ttctgtctgg tgaaacaagc atttttgtat tttqgqqqac
                                                                     360
420
caaaaatcac tctttggtgt aaatatctag tcttcaagca attcttgtaa tgcaatcaga
                                                                     480
aagaaaaaaa tocatggttt gggaggcaaa atttttgtgt totaaattot atataactga
                                                                     540
gttcatttgc ttaactgcaa agcaggagct gctagtgcct gtctgtactg aggttcagag
                                                                     600
agactgtggg aatatggggg aattagaggc tatctgaggc tcttcaacac aataacccaa
                                                                     660
gaagctattt aaatgctctt taaggtattt acataaatat tactattctc attgtgcttt
                                                                     720
                                                                     780
tattttgtgt tatcatgatt ataattgaag tgtctactgt tactgcctcc tgatctttgc
                                                                     840
tagctatgga gcatggactg ggcttttaga gcagcagccc caaaggaacc taaacattaa
agcagagetg coetcaatgg tttaacetgt gtgactetge etatgacage cecacecace
                                                                     900
catcttcact ggatccaaat caggagcaag gccgttgggg tacctggtgg gggtgatgct
                                                                     960
gtcaggggag gagcccaaaa gggcaagctc aaatttgaat gtgaagggcc aatgcactgt
                                                                    1020
cagactgaga cagagaacca tcattaattg aagtgagatt tttctggcct gagacttgca
                                                                    1080
gggaggcaag aagacactct ggacaccact atggacaggt aaagaggcag tcttctcqtq
                                                                    1140
ggtgattgca ctggccttcc tctcagagca aatctgagta atgagactgg tagctatccc
                                                                    1200
tttctctcat gtaactgtct gactgataag atcagcttga tcaatatgca tatatatttt
                                                                    1260
ttgatctgtc tccttttctt ctattcagat cttatacgct gtcagcccaa ttctttctgt
                                                                    1320
ttcagacttc tcttgatttc cctctttttc atgtggcaaa agaagtagtg cgtacaatgt
                                                                    1380
actgattcgt cctgagattt gtaccatggt tgaaactaat ttatggtaat aatattaaca
                                                                    1440
                                                                    1500
tagcaaatct ttagagactc aaatcatgaa aaggtaatag cagtactgta ctaaaaacgg
```

Cent

tagtgctaat tttcgtaata attttgtaaa tattcaacag taaaacaact tgaagacaca 1560 ctttcctagg gaggcgttac tgaaataatt tagctatagt aagaaaattt gtaattttag 1620 aaatgccaag cattctaaat taattgcttg aaagtcacta tgattgtgtc cattataagg 1680 1740 agacaaattc attcaagcaa gttatttaat gttaaaggcc caattgttag gcagttaatg gcacttttac tattaactaa tetttecatt tgtteagacg tagettaact tacetettag 1800 gtgtgaattt ggttaaggtc ctcataatgt ctttatgtgc agtttttgat aggttattgt 1860 catagaactt attctattcc tacatttatg attactatgg atgtatgaga ataacaccta 1920 atccttatac tttacctcaa tttaactcct ttataaagaa cttacattac agaataaaga 1980 ttttttaaaa atatatttt ttgtagagac agggtcttag cccagccgag gctggtctct 2040 aagtootggo ccaagogato otootgootg ggootootaa agtgotggaa ttatagacat 2100 gagccatcac atccaatata cagaataaag atttttaatg gaggatttaa tgttcttcag 2160 aaaattttct tgaggtcaga caatgtcaaa tgtctcctca gtttacactg agattttgaa 2220 aacaagtctg agctataggt ccttgtgaag ggtccattgg aaatacttgt tcaaagtaaa 2280 atggaaagca aaggtaaaat cagcagttga aattcagaga aagacagaaa aggagaaaag 2340 atgaaattca acaggacaga agggaaatat attatcatta aggaggacag tatctgtaga 2400 gctcattagt gatggcaaaa tgacttggtc aggattattt ttaacccgct tgtttctggt 2460 ttgcacggct ggggatgcag ctagggttct gcctcaggga gcacagctgt ccagagcagc 2520 tgtcagcctg caagcctgaa acactccctc ggtaaagtcc ttcctactca ggacagaaat 2580 gacgagaaca gggagctgga aacaggcccc taaccagaga agggaagtaa tggatcaaca 2640 aagttaacta gcaggtcagg atcacgcaat tcatttcact ctgactggta acatgtgaca 2700 gaaacagtgt aggcttattg tattttcatg tagagtagga cccaaaaatc cacccaaagt 2760 cctttatcta tgccacatcc ttcttatcta tacttccagg acactttttc ttccttatga 2820 taaggetete tetetetea cacacacaca cacacacaca cacacacaca cacacacaca 2880 cacaaacaca caccccgcca accaaggtgc atgtaaaaag atgtagattc ctctgccttt 2940 ctcatctaca cagcccagga gggtaagtta atataagagg gatttattgg taagagatga 3000 3060 tgcttaatct gtttaacact gggcctcaaa gagagaattt cttttcttct gtacttatta agcacctatt atgtgttgag cttatatata caaagggtta ttatatgcta atatagtaat 3120 agtaatgktg gttggtacta tggtaattac cataaaaatt awtatccttt taaaataaag 3180 ctaattatta ttggatcttt tttagtattc attttatgtt ttttatgttt ttgattttt 3240 aaaagacaat ctcaccctgt tacccaggct ggagtgcagt ggtgcaatca tagctttctg 3300 cagtettgaa eteetggget caageaatee teetgeettg geeteecaaa gtgttgggat 3360 acagtcatga qccactqcat ctqqcctaqq atccatttaq attaaaatat qcattttaaa 3420 ttttaaaata atatggctaa tttttacctt atgtaatgtg tatactggta ataaatctag 3480 tttgctgcct aaagtttaaa gtgctttcca ataagcttca tgtacgtgag gggagacatt 3540 taaagtgaaa cagacagcca ggtgtggtgg ctcacgcctg taatcccagc actctgggag 3600 gctgaggtgg gtggatcgct tgagccctgg agttcaagac cagcctgagc aacatggcaa 3660 aaccctgttt ctataacaaa aattagccgg gcatggtggc atgtgcctgt ggtcccagct 3720 actagggggc tgaggcagga gaatctttgg agcccaggag gtcaaggctg cactgagcag 3780 tgcttgcgcc actgcactcc agcctgggtg acaggaccag accttgcctc aaaaaaataa 3840 gaagaaaaat taaaaataaa tggaaacaac tacaaagagc tgttgtccta gatgagctac 3900 ttagttaggc tgatattttg gtatttaact tttaaagtca gggtctgtca cctgcactac 3960 attattaaaa tatcaattct caatgtatat ccacacaaag actggtacgt gaatgttcat 4020 agtaccttta ttcacaaaac cccaaagtag agactatcca aatatccatc aacaagtgaa 4080 caaataaaca aaatgtgcta tatccatgca atggaatacc accctgcagt acaaaggaag 4140 aagctacttg gggatgaatc ccaaagtcat gacgctaaat gaaagagtca gacatgaagg 4200 aggagataat gtatgccata cgaaattcta gaaaatgaaa gtaacttata gttacagaaa 4260 gcaaatcagg gcaggcatag aggctcacac ctgtaatccc agcactttga gaggccacgt 4320 gggaagattg ctagaactca ggagttcaag accagcctgg gcaacacagt gaaactccat 4380 tetecacaaa aatgggaaaa aaagaaagca aateagtggt tgteetgtgg ggaggggaag 4440 gactgcaaag agggaagaag ctctggtggg gtgagggtgg tgattcaggt tctgtatcct 4500 gactgtggta gcagtttggg gtgtttacat ccaaaaatat tcgtagaatt atgcatctta 4560 aatgggtgga gtttactgta tgtaaattat acctcaatgt aagaaaaaat aatgtgtaaq 4620 aaaagtttca attctcttgc cagcaaacgt tattcaaatt cctgagccct ttacttcgca 4680 aattetetge aettetgeee egtaceatta ggtgacagea etageteeae aaattggata 4740 aatgcatttc tggaaaagac tagggacaaa atccaggcat cacttgtgct ttcatatcaa 4800 ccacgctgta cagcttgtgt tgctgtctgc agctgcaatg gggactcttg atttctttaa 4860 ggaaacttgg gttaccagag tatttccaca aatgctattc aaattagtgc ttatgatatg 4920

Cent

caagacactg	tgctaggagc	cagaaaacaa	agaggaggag	aaatcagtca	ttatqtqqqa	4980
	aagatattta					5040
	atcagtataa					5100
	agaatcttaa					5160
agacactatg	atatttgaga	tttaaaaaat	ctttaatatt	ttaaaattta	gagctcttct	5220
atttttccat	agtattcaag	tttgacaatg	atcaagtatt	actctttctt	tttttttt	5280
tttttttt	tttgagatgg	agttttggtc	ttgttgccca	tgctggagtg	gaatggcatg	5340
aycatagctc	actgcaacct	ccacctcctg	ggttcaagca	aagctgtcgc	ctcagcctcc	5400
cgggtagatg	ggattacagg	cgcccaccac	cacactcggc	taatgtttgt	atttttagta	5460
gagatggggt	ttcaccatgt	tggccaggct	ggtctcaaac	tcctgacctc	agag ·	5514
<210> 10						
<211> 6564						
<212> DNA						
<213> Homo	sapiens					
	-					
<400> 10						
	aatcccagct					60
	agcctgggag				-	120
	acaaagtgag					180
	aactgtaaaa					240
	agagaaccat					300
	tcatggtggt					360 420
	taaaaggcca					480
	gagcaaacag atgattaatt					540
	ctaggctgct					600
	ttgaggaata					660
	actggagggg					720
	tgtttcgttt					780
	agacagtggc					840
	ctcaattggc					900
	ggctcaggag					960
	aagtaatgac					1020
	ctcttgcatt					1080
	tttaccaatt					1140
ctgtgctacg	tagtgaagag	gcgtgacagt	gctacatcct	tttcactgga	ctttggttat	1200
cttcgcaata	aggtatcaat	taaagtcagc	tttgcaagca	gtttaatggt	caactgtgag	1260
tgcttttaga	gccacctgct	gatggtatta	cttccatcct	tttttggcat	ttgtgtctct	1320
	tcaaatcctt					1380
	aatatgtgat					1440
	gtgccaagaa					1500
	tgagattaat					1560
	aaaattttaa					1620
	aatttgggaa					1680
	tactcacatg					1740
-	agaagcctcg		_			1800
	ccaagagact					1860
	tcctctctcc					1920
	gggtggaagg					1980
	gcctacattt					2040
	atttcagaag					2100
	acttctctta					2160
	tcccaaatgg					2220
	atgttacatc cataaacaca					2280 2340
	cacttcgtct					2340
caacicagig	caccicgici	ccccattcc	acaaaaaccc	acayooctoo	ccacccgc	2400

CON

aggactagtg ctgccaaggg ttcagctcta cctactggtg tgctcttttg agcaagttgc 2460 2520 ttagcctctc tgtaacacaa ggacaatagc tgcaagcatc cccaaagatc attgcaggag 2580 acaatgacta aggetaceag ageegeaata aaagteagtg aattttageg tggteetete 2640 tgtctctcca qaacggctgc cacgtggaat tgctcttcct ccgctacatc tcggactggg 2700 acctagacce tggccgctge taccgcgtca cetggttcae etectggage cectgctacg 2760 actgtgcccg acatgtggcc gactttctgc gagggaaccc caacctcagt ctgaggatct tcaccgcgcg cctctacttc tgtgaggacc gcaaggctga gcccgagggg ctgcggcggc 2820 tgcaccgcgc cggggtgcaa atagccatca tgaccttcaa aggtgcgaaa gggccttccg 2880 2940 cgcaggcgca gtgcagcagc ccgcattcgg gattgcgatg cggaatgaat gagttagtgg 3000 ggaagctcga ggggaagaag tgggcgggga ttctggttca cctctggagc cgaaattaaa gattagaagc agagaaaaga gtgaatggct cagagacaag gccccgagga aatgagaaaa 3060 tggggccagg gttgcttctt tcccctcgat ttggaacctg aactgtcttc tacccccata 3120 tccccgcctt tttttccttt ttttttttt tgaagattat ttttactgct ggaatacttt 3180 tgtagaaaac cacgaaagaa ctttcaaagc ctgggaaggg ctgcatgaaa attcagttcg 3240 tctctccaga cagcttcggc gcatcctttt ggtaaggggc ttcctcgctt tttaaatttt 3300 ctttctttct ctacagtctt ttttggagtt tcgtatattt cttatatttt cttattgttc 3360 aatcactctc agttttcatc tgatgaaaac tttatttctc ctccacatca gctttttctt 3420 ctgctgtttc accattcaga gccctctgct aaggttcctt ttccctccct tttctttctt 3480 ttgttgtttc acatetttaa atttetgtet etceecaggg ttgegtttee tteetggtea 3540 3600 ccaaaaaaac tettteecaa tttaetttet tecaacatgt tacaaageca tecaeteagt 3660 ttagaagact ctccggcccc accgaccccc aacctcgttt tgaagccatt cactcaattt 3720 gettetetet ttetetaeag eccetgtatg aggttgatga ettaegagae geatttegta 3780 ctttgggact ttgatagcaa cttccaggaa tgtcacacac gatgaaatat ctctgctgaa 3840 gacagtggat aaaaaacagt ccttcaagtc ttctctgttt ttattcttca actctcactt 3900 tcttagagtt tacagaaaaa atatttatat acgactcttt aaaaagatct atgtcttgaa 3960 aatagagaag gaacacaggt ctggccaggg acgtgctgca attggtgcag ttttgaatgc 4020 aacattgtcc cctactggga ataacagaac tgcaggacct gggagcatcc taaagtgtca 4080 acgtttttct atgactttta ggtaggatga gagcagaagg tagatcctaa aaagcatggt 4140 qaqaqqatca aatqttttta tatcaacatc ctttattatt tqattcattt qaqttaacaq 4200 tggtgttagt gatagatttt tctattcttt tcccttgacg tttactttca agtaacacaa 4260 4320 actettecat caggecatga tetataggae etectaatga gagtatetgg gtgattgtga ccccaaacca tctctccaaa gcattaatat ccaatcatgc gctgtatgtt ttaatcagca 4380 gaagcatgtt tttatgtttg tacaaaagaa gattgttatg ggtggggatg gaggtataga 4440 ccatgcatgg tcaccttcaa gctactttaa taaaggatct taaaatgggc aggaggactg 4500 tgaacaagac accctaataa tgggttgatg tctgaagtag caaatcttct ggaaacgcaa 4560 actottttaa ggaagtooot aatttagaaa cacccacaaa ottoacatat cataattago 4620 aaacaattgg aaggaagttg cttgaatgtt ggggagagga aaatctattg gctctcgtgg 4680 gtctcttcat ctcagaaatg ccaatcaggt caaggtttgc tacattttgt atgtgtgtga 4740 tgcttctccc aaaggtatat taactatata agagagttgt gacaaaacag aatgataaag 4800 4860 ctgcgaaccg tggcacacgc tcatagttct agctgcttgg gaggttgagg agggaggatg 4920 gcttgaacac aggtgttcaa ggccagcctg ggcaacataa caagatcctg tctctcaaaa aaaaaaaaa aaaaaagaaa gagagagggc cgggcgtggt ggctcacgcc tgtaatccca 4980 gcactttggg aggccgagcc gggcggatca cctgtggtca ggagtttgag accagcctgg 5040 ccaacatggc aaaaccccgt ctgtactcaa aatgcaaaaa ttagccaggc gtggtagcag 5100 gcacctgtaa tcccagctac ttgggaggct gaggcaggag aatcgcttga acccaggagg 5160 tggaggttgc agtaagctga gatcgtgccg ttgcactcca gcctgggcga caagagcaag 5220 actctgtctc agaaaaaaaa aaaaaaaaga gagagagaga gaaagagaac aatatttggg 5280 agagaaggat ggggaagcat tgcaaggaaa ttgtgcttta tccaacaaaa tgtaaggagc 5340 5400 caataaggga tooctatttg totottttgg tgtotatttg tooctaacaa otgtotttga cagtgagaaa aatattcaga ataaccatat ccctgtgccg ttattaccta gcaacccttg 5460 caatgaagat gagcagatcc acaggaaaac ttgaatgcac aactgtctta ttttaatctt 5520 attgtacata agtttgtaaa agagttaaaa attgttactt catgtattca tttatatttt 5580 atattatttt gcgtctaatg attttttatt aacatgattt ccttttctga tatattgaaa 5640 5700 tggagtetea aagetteata aatttataac tttagaaatg attetaataa caacgtatgt 5760 aattgtaaca ttgcagtaat ggtgctacga agccatttct cttgattttt agtaaacttt tatgacagca aatttgcttc tggctcactt tcaatcagtt aaataaatga taaataattt 5820

Cont

tggaagctgt gaagataaaa taccaaataa aataatataa aagtgattta tatgaagtta 5880 aaataaaaaa tcagtatgat ggaataaact tgagagtcca gaagttatcc catacatctg 5940 taatcaacta atttctcaca agggtgtaag gaccattcaa tggagaaaaa atgatcttct 6000 caacaaatgg tgctgagcta attggatatt acatgcaaag gaatgaattt gagtctctac 6060 tacacaccat atataaaaat taattaaaaa ttcatcaaat acctaaatat tagagactaa 6120 tttataaacc gtagagagaa acataggtaa aaatgtttat ggctttagat taggcaacag 6180 cttcttaatt atgacatcaa aagcacaagc aaccaaagac aaaaataaat cagttggact 6240 tcatcqaaat taaaaatctt tgtgcatcaa aggacactta gtaagaaagt gaaaagacaa 6300 cccacagaag tgggagaaaa cacttgcaaa tcatatatct gataagggtt gtgatattat 6360 gatatatata taggtttttg tccatagttc ctggcttata aaccccctca cccttgttac 6420 agtcatttgt tataaggttg gatggtttag gcctcagaag caaaactctc tctctcacct 6480 tetecagece teetgtetet ggeaceteat tettecetga ggecacatag aaactagaat 6540 6564 ctctcttcca caaggcggtc aaag <210> 11 <211> 87 <212> DNA <213> Homo sapiens <400> 11 agagaaccat cattaattga agtgagattt ttctggcctg agacttgcag ggaggcaaga 60 87 agacactctg gacaccacta tggacag <210> 12 <211> 148 <212> DNA <213> Homo sapiens <400> 12 60 cctcttgatg aaccggagga agtttcttta ccaattcaaa aatgtccgct gggctaaggg 120 teggegtgag acetacetgt getaegtagt gaagaggegt gaeagtgeta cateetttte actggacttt ggttatcttc gcaataag 148 <210> 13 <211> 271 <212> DNA <213> Homo sapiens <400> 13 aacggctgcc acgtggaatt gctcttcctc cgctacatct cggactggga cctagaccct 60 ggccgctgct accgcgtcac ctggttcacc tcctggagcc cctgctacga ctgtgcccga 120 catgtggccg actttctgcg agggaacccc aacctcagtc tgaggatctt caccgcgcgc 180 ctctacttct gtgaggaccg caaggctgag cccgaggggc tgcggcggct gcaccgcgcc 240 ggggtgcaaa tagccatcat gaccttcaaa g 271 <210> 14 <211> 116 <212> DNA <213> Homo sapiens <400> 14 60 attattttta ctgctggaat acttttgtag aaaaccacga aagaactttc aaagcctggg aagggctgca tgaaaattca gttcgtctct ccagacagct tcggcgcatc cttttg 116 <210> 15 <211> 2172 <212> DNA

a cont

## <213> Homo sapiens

<400> 15 cccctgtatg aggttgatga cttacgagac gcatttcgta ctttgggact ttgatagcaa 60 cttccaggaa tgtcacacac gatgaaatat ctctgctgaa gacagtggat aaaaaacagt 120 ccttcaagtc ttctctgttt ttattcttca actctcactt tcttagagtt tacagaaaaa 180 240 atatttatat acgactcttt aaaaagatct atgtcttgaa aatagagaag gaacacaggt ctggccaggg acgtgctgca attggtgcag ttttgaatgc aacattgtcc cctactggga 300 ataacagaac tgcaggacct gggagcatcc taaagtgtca acgtttttct atgactttta 360 420 ggtaggatga gagcagaagg tagatcctaa aaagcatggt gagaggatca aatgttttta tatcaacatc ctttattatt tgattcattt gagttaacag tggtgttagt gatagatttt 480 540 totattottt tocottgacg tttactttca agtaacacaa actottocat caggocatga 600 tctataggac ctcctaatga gagtatctgg gtgattgtga ccccaaacca tctctccaaa gcattaatat ccaatcatgc gctgtatgtt ttaatcagca gaagcatgtt tttatgtttg 660 tacaaaagaa gattgttatg ggtggggatg gaggtataga ccatgcatgg tcaccttcaa 720 gctactttaa taaaggatct taaaatgggc aggaggactg tgaacaagac accctaataa 780 840 tgggttgatg tctgaagtag caaatcttct ggaaacgcaa actcttttaa ggaagtccct 900 aatttagaaa cacccacaaa cttcacatat cataattagc aaacaattgg aaggaagttg cttgaatgtt ggggagaga aaatctattg gctctcgtgg gtctcttcat ctcagaaatg 960 ccaatcaggt caaggtttgc tacattttgt atgtgtgtga tgcttctccc aaaggtatat 1020 taactatata agagagttgt gacaaaacag aatgataaag ctgcgaaccg tggcacacgc 1080 tcatagttct agctgcttgg gaggttgagg agggaggatg gcttgaacac aggtgttcaa 1140 1200 gagagagggc cgggcgtggt ggctcacgcc tgtaatccca gcactttggg aggccgagcc 1260 gggcggatca cctgtggtca ggagtttgag accagcctgg ccaacatggc aaaaccccgt 1320 ctgtactcaa aatgcaaaaa ttagccaggc gtggtagcag gcacctgtaa tcccagctac 1380 1440 ttgggaggct gaggcaggag aatcgcttga acccaggagg tggaggttgc agtaagctga 1500 gatcgtgccg ttgcactcca gcctgggcga caagagcaag actctgtctc agaaaaaaaa 1560 aaaaaaaaga gagagagaga gaaagagaac aatatttggg agagaaggat ggggaagcat 1620 tgcaaggaaa ttgtgcttta tccaacaaaa tgtaaggagc caataaggga tccctatttg tctcttttqq tqtctatttq tccctaacaa ctqtctttqa caqtqaqaaa aatattcaqa 1680 ataaccatat ccctqtqccq ttattaccta qcaacccttq caatgaagat gagcagatcc 1740 acaggaaaac ttgaatgcac aactgtctta ttttaatctt attgtacata agtttgtaaa 1800 agagttaaaa attgttactt catgtattca tttatatttt atattattt gcgtctaatg 1860 attttttatt aacatgattt ccttttctga tatattgaaa tggagtctca aagcttcata 1920 aatttataac tttagaaatg attctaataa caacgtatgt aattgtaaca ttgcagtaat 1980 ggtgctacga agccatttct cttgattttt agtaaacttt tatgacagca aatttgcttc 2040 tqqctcactt tcaatcaqtt aaataaatga taaataattt tqqaaqctqt qaaqataaaa 2100 taccaaataa aataatataa aagtgattta tatgaagtta aaataaaaaa tcagtatgat 2160 ggaataaact tg 2172 <210> 16

Cont

<211> 25
<212> DNA
<213> Artificial Sequence
<220>
<223> Artificially synthesized primer sequence, 1

<400> 16 gagaccgata tggacagcct tctga

<210> 17 <211> 27 <212> DNA

<213> Artificial Sequence		
<220> <223> Artificially synthesized primer sequence,	181	
<400> 17 tcacgtgtga cattccagga ggttgct	27	7
<210> 18 <211> 30 <212> DNA <213> Artificial Sequence		
<220> <223> Artificially synthesized primer sequence,	22	
<400> 18 gtagtgaaga ggcgtgacag tgctacatcc	30	)
<210> 19 <211> 27 <212> DNA <213> Artificial Sequence		
<220> <223> Artificially synthesized primer sequence,	25	
<400> 19 gttccctcgc agaaagtcgg ccacatg	27	,
<210> 20 <211> 24 <212> DNA <213> Artificial Sequence		
<220> <223> Artificially synthesized primer sequence,	р3	
<400> 20 gagtttgagg tacaagttgg acac	24	Į
<210> 21 <211> 23 <212> DNA <213> Artificial Sequence		
<220> <223> Artificially synthesized primer sequence.	p9	

a Cont

<400> 21 tatctcctct ctcctaacac gct		23
<210> 22 <211> 23 <212> DNA <213> Artificial Sequence		
<220> <223> Artificially synthesized primer sequence,	p10	
<400> 22 acaagctgat aatattctcc cat		23
<210> 23 <211> 22 <212> DNA <213> Artificial Sequence		
<220> <223> Artificially synthesized primer sequence,	p12	
<400> 23 tcttcggtga ggtagtgtga tg		22
<210> 24 <211> 30 <212> DNA <213> Artificial Sequence		
<220> <223> Artificially synthesized primer sequence,	p14	
<400> 24 agcctcttga tgaaccggag gaagtttctt		30
<210> 25 <211> 28 <212> DNA <213> Artificial Sequence		
<220> <223> Artificially synthesized primer sequence,	p16	
<400> 25		28

a l

```
<210> 26
<211> 21
<212> DNA
<213> Artificial Sequence
<220>
<223> Artificially synthesized primer sequence, p17
<400> 26
tagaccctgg ccgctgctac c
                                                                        21
<210> 27
<211> 22
<212> DNA
<213> Artificial Sequence
<220>
<223> Artificially synthesized primer sequence, p19
<400> 27
cgcatcgcaa tcccgaatgc gg
                                                                        22
<210> 28
<211> 28
<212> DNA
<213> Artificial Sequence
<220>
<223> Artificially synthesized primer sequence, p26
<400> 28
caaaaggatg cgccgaagct gtctggag
                                                                        28
<210> 29
<211> 23
<212> DNA
<213> Artificial Sequence
<220>
<223> Artificially synthesized primer sequence, p29
<400> 29
gttggaagaa agtaaattgg gaa
                                                                        23
<210> 30
<211> 21
<212> DNA
<213> Artificial Sequence
```

```
<220>
<223> Artificially synthesized primer sequence, p36
<400> 30
gatactctca ttaggaggtc c
                                                                        21
<210> 31
<211> 26
<212> DNA
<213> Artificial Sequence
<220>
<223> Artificially synthesized primer sequence, p48
<400> 31
cattaattga agtgagattt ttctgg
                                                                        26
<210> 32
<211> 22
<212> DNA
<213> Artificial Sequence
<220>
<223> Artificially synthesized primer sequence, p59
<400> 32
agcatttgtg gaaatactct gg
                                                                        22
<210> 33
<211> 24
<212> DNA
<213> Artificial Sequence
<220>
<223> Artificially synthesized primer sequence, p85
<400> 33
aactttattt ctcctccaca tcag
                                                                        24
<210> 34
<211> 21
<212> DNA
<213> Artificial Sequence
<223> Artificially synthesized primer sequence, p86
```

<400> 34 21 gtgaatggct cagagacaag g <210> 35 <211> 11204 <212> DNA <213> Homo sapiens <400> 35 aggttcagag agactgtggg aatatggggg aattagaggc tatctgaggc tcttcaacac 60 aataacccaa gaagctattt aaatgctctt taaggtattt acataaatat tactattctc 120 attgtgcttt tattttgtgt tatcatgatt ataattgaag tgtctactgt tactgcctcc 180 tgatctttgc tagctatgga gcatggactg ggcttttaga gcagcagccc caaaggaacc 240 taaacattaa agcagagctg ccctcaatgg tttaacctgt gtgactctgc ctatgacagc 300 eccacceace catetteact ggatecaaat caggageaag geegttgggg tacetggtgg 360 gggtgatgct gtcaggggag gagcccaaaa gggcaagctc aaatttgaat gtgaagggcc 420 aatgcactgt cagactgaga cagagaacca tcattaattg aagtgagatt tttctggcct 480 gagacttgca gggaggcaag aagacactct ggacaccact atggacaggt aaagaggcag 540 tettetegtg ggtgattgea etggeettee teteagagea aatetgagta atgagaetgg 600 tagctatccc tttctctcat gtaactgtct gactgataag atcagcttga tcaatatgca 660 tatatatttt ttgatctgtc tccttttctt ctattcagat cttatacgct gtcagcccaa 720 ttetttetgt tteagaette tettgattte eetettttte atgtggeaaa agaagtagtg 780 cgtacaatgt actgattcgt cctgagattt gtaccatggt tgaaactaat ttatggtaat 840 aatattaaca tagcaaatct ttagagactc aaatcatgaa aaggtaatag cagtactgta 900 ctaaaaacgg tagtgctaat tttcgtaata attttgtaaa tattcaacag taaaacaact 960 tgaagacaca ctttcctagg gaggcgttac tgaaataatt tagctatagt aagaaaattt 1020 gtaattttag aaatgccaag cattctaaat taattgcttg aaagtcacta tgattgtgtc 1080 cattataagg agacaaattc attcaagcaa gttatttaat gttaaaggcc caattgttag 1140 gcagttaatg gcacttttac tattaactaa tctttccatt tqttcagacg tagcttaact 1200 tacctcttag gtgtgaattt ggttaaggtc ctcataatgt ctttatgtgc agtttttgat 1260 aggttattgt catagaactt attctattcc tacatttatg attactatgg atgtatgaga 1320 ataacaccta atccttatac tttacctcaa tttaactcct ttataaagaa cttacattac 1380 agaataaaga ttttttaaaa atatattttt ttgtagagac agggtcttag cccagccgag 1440 gctggtctct aagtcctggc ccaagcgatc ctcctgcctg ggcctcctaa agtgctggaa 1500 ttatagacat gagccatcac atccaatata cagaataaag atttttaatg gaggatttaa 1560 tgttcttcag aaaattttct tgaggtcaga caatgtcaaa tgtctcctca gtttacactg 1620 agattttgaa aacaagtctg agctataggt ccttgtgaag ggtccattgg aaatacttgt 1680 tcaaagtaaa atggaaagca aaggtaaaat cagcagttga aattcagaga aagacagaaa 1740 aggagaaaag atgaaattca acaggacaga agggaaatat attatcatta aggaggacag 1800 tatctgtaga gctcattagt gatggcaaaa tgacttggtc aggattattt ttaacccgct 1860 tgtttctggt ttgcacggct ggggatgcag ctagggttct gcctcaggga gcacagctgt 1920 ccagagcage tgtcagcetg caageetgaa acaeteeete ggtaaagtee tteetaetea 1980 ggacagaaat gacgagaaca gggagctgga aacaggcccc taaccagaga agggaagtaa 2040 tggatcaaca aagttaacta gcaggtcagg atcacgcaat tcatttcact ctgactggta 2100 acatgtgaca gaaacagtgt aggcttattg tattttcatg tagagtagga cccaaaaatc 2160 cacccaaagt cetttateta tgecacatee ttettateta taetteeagg acaettttte 2220 tteettatga taaggetete teteteteea cacacacac cacacacaca cacacacaca 2280 cacacacaca cacaaacaca caccccgcca accaaggtgc atgtaaaaag atgtagattc 2340 ctctgccttt ctcatctaca cagcccagga gggtaagtta atataagagg gatttattgg 2400 taagagatga tgcttaatct gtttaacact gggcctcaaa gagagaattt cttttcttct 2460 gtacttatta agcacctatt atgtgttgag cttatatata caaagggtta ttatatgcta 2520 atatagtaat agtaatggtg gttggtacta tggtaattac cataaaaatt attatccttt 2580 taaaataaag ctaattatta ttggatcttt tttagtattc attttatgtt ttttatgttt 2640 ttgatttttt aaaagacaat ctcaccctgt tacccaggct ggagtgcagt ggtgcaatca 2700 tagctttctg cagtcttgaa ctcctgggct caagcaatcc tcctgccttg gcctcccaaa 2760 gtgttgggat acagtcatga gccactgcat ctggcctagg atccatttag attaaaatat 2820 gcattttaaa ttttaaaata atatggctaa tttttacctt atgtaatgtg tatactggta 2880

Cont

2940 ataaatctag tttgctgcct aaagtttaaa gtgctttcca ataagcttca tgtacgtgag gggaqacatt taaaqtqaaa caqacaqcca ggtqtqqtqq ctcacqcctq taatcccaqc 3000 actotgggag gotgaggtgg gtggatogot tgagcootgg agttcaagac cagcotgago 3060 aacatggcaa aaccctgttt ctataacaaa aattagccgg gcatggtggc atgtgcctgt 3120 ggtcccagct actagggggc tgaggcagga gaatctttgg agcccaggag gtcaaggctg 3180 cactgagcag tgcttgcgcc actgcactcc agcctgggtg acaggaccag accttgcctc 3240 aaaaaaataa gaagaaaaat taaaaataaa tggaaacaac tacaaagagc tgttgtccta 3300 gatgagetae ttagttagge tgatattttg gtatttaaet tttaaagtea gggtetgtea 3360 cctgcactac attattaaaa tatcaattct caatgtatat ccacacaaag actggtacgt 3420 gaatgttcat agtaccttta ttcacaaaac cccaaagtag agactatcca aatatccatc 3480 aacaagtgaa caaataaaca aaatgtgcta tatccatgca atggaatacc accctgcagt 3540 acaaaggaag aagctacttg gggatgaatc ccaaagtcat gacgctaaat gaaagagtca 3600 gacatgaagg aggagataat gtatgccata cgaaattcta gaaaatgaaa gtaacttata 3660 gttacagaaa gcaaatcagg gcaggcatag aggctcacac ctgtaatccc agcactttga 3720 gaggccacgt gggaagattg ctagaactca ggagttcaag accagcctgg gcaacacagt 3780 gaaactccat tctccacaaa aatgggaaaa aaagaaagca aatcagtggt tgtcctgtgg 3840 ggaggggaag gactgcaaag agggaagaag ctctggtggg gtgagggtgg tgattcaggt 3900 3960 tetgtateet qaetgtggta geagtttggg gtgtttaeat eeaaaaatat tegtagaatt atgcatctta aatgggtgga gtttactgta tgtaaattat acctcaatgt aagaaaaaat 4020 aatgtgtaag aaaagtttca attetettge cagcaaacgt tattcaaatt cetgageeet 4080 ttacttcgca aattctctgc acttctgccc cgtaccatta ggtgacagca ctagctccac 4140 aaattggata aatgcatttc tggaaaagac tagggacaaa atccaggcat cacttgtgct 4200 ttcatatcaa ccacgctgta cagcttgtgt tgctgtctgc agctgcaatg gggactcttg 4260 atttctttaa ggaaacttgg gttaccagag tatttccaca aatgctattc aaattagtgc 4320 ttatgatatg caagacactg tgctaggagc cagaaaacaa agaggaggag aaatcagtca 4380 ttatgtggga acaacatagc aagatattta gatcattttg actagttaaa aaagcagcag 4440 agtacaaaat cacacatgca atcagtataa tccaaatcat gtaaatatgt gcctgtagaa 4500 agactagagg aataaacaca agaatcttaa cagtcattgt cattagacac taagtctaat 4560 tattattatt agacactatg atatttgaga tttaaaaaat ctttaatatt ttaaaattta 4620 gagetettet attitteeat agtatteaag titgaeaatg ateaagtatt actetitett 4680 tttttttttt tttttttt tttgagatgg agttttggtc ttgttgccca tgctggagtg 4740 gaatggcatg accatagete actgeaacet ceaceteetg ggtteaagea aagetgtege 4800 ctcagcctcc cgggtagatg ggattacagg cgcccaccac cacactcggc taatgtttgt 4860 atttttagta gagatggggt ttcaccatgt tggccaggct ggtctcaaac tcctgacctc 4920 agaggateca cetgeeteag ceteceaaag tgetgggatt acagatgtag gecaetgege 4980 ccggccaagt attgctctta tacattaaaa aacaggtgtg agccactgcg cccagccagg 5040 tattgctctt atacattaaa aaataggccg gtgcagtggc tcacgcctgt aatcccagca 5100 ctttgggaag ccaaggcggg cagaacaccc gaggtcagga gtccaaggcc agcctggcca 5160 agatggtgaa accccgtctc tattaaaaat acaaacatta cctgggcatg atggtgggcg 5220 cctgtaatcc cagctactca ggaggctgag gcaggaggat ccgcggagcc tggcagatct 5280 gcctgagcct gggaggttga ggctacagta agccaagatc atgccagtat acttcagcct 5340 gggcgacaaa gtgagaccgt aacaaaaaaa aaaaaattta aaaaaagaaa tttagatcaa 5400 gatccaactg taaaaagtgg cctaaacacc acattaaaga gtttggagtt tattctgcag 5460 gcagaagaga accatcaggg ggtcttcagc atgggaatgg catggtgcac ctggtttttg 5520 tgagatcatg gtggtgacag tgtggggaat gttattttgg agggactgga ggcagacaga 5580 5640 ccggttaaaa ggccagcaca acagataagg aggaagaaga tgagggcttg gaccgaagca gagaagagca aacagggaag gtacaaattc aagaaatatt ggggggtttg aatcaacaca 5700 tttagatgat taattaaata tgaggactga ggaataagaa atgagtcaag gatggttcca 5760 ggctgctagg ctgcttacct gaggtggcaa agtcgggagg agtggcagtt taggacaggg 5820 ggcagttgag gaatattgtt ttgatcattt tgagtttgag gtacaagttg gacacttagg 5880 5940 taaagactgg aggggaaatc tgaatataca attatgggac tgaggaacaa gtttatttta ttttttgttt cgttttcttg ttgaagaaca aatttaattg taatcccaag tcatcagcat 6000 ctagaagaca gtggcaggag gtgactgtct tgtgggtaag ggtttggggt ccttgatgag 6060 tatctctcaa ttggccttaa atataagcag gaaaaggagt ttatgatgga ttccaggctc 6120 agcagggctc aggagggctc aggcagccag cagaggaagt cagagcatct tctttqgttt 6180 agcccaagta atgacttcct taaaaagctg aaggaaaatc cagagtgacc agattataaa 6240 ctgtactctt gcattttctc tccctcctct cacccacage ctcttgatga accggaggaa 6300

Q. Cent

gtttctttac	caattcaaaa	atgtccgctg	ggctaagggt	cggcgtgaga	cctacctgtg	6360
ctacgtagtg	aagaggcgtg	acagtgctac	atccttttca	ctggactttg	gttatcttcg	6420
caataaggta	tcaattaaag	tcagctttgc	aagcagttta	atggtcaact	gtgagtgctt	6480
ttagagccac	ctgctgatgg	tattacttcc	atccttttt	ggcatttgtg	tctctatcac	6540
attcctcaaa	tcctttttt	tatttcttt	tccatgtcca	tgcacccata	ttagacatgg	6600
cccaaaatat	gtgatttaat	tcctccccag	taatgctggg	caccctaata	ccactccttc	6660
cttcagtgcc	aagaacaact	gctcccaaac	tgtttaccag	ctttcctcag	catctgaatt	6720
	ttaattaagc					6780
aagcaaaaat	tttaaatgtg	aaaaacaaat	tgtgtcttaa	gcatttttga	aaattaagga	6840
	gggaaaaaat					6900
cctcctactc	acatgggtcg	taggccagtg	aatacattca	acatggtgat	ccccagaaaa	6960
ctcagagaag	cctcggctga	tgattaatta	aattgatctt	tcggctaccc	gagagaatta	7020
catttccaag	agacttcttc	accaaaatcc	agatgggttt	acataaactt	ctgcccatgg	7080
gtatctcctc	tctcctaaca	cgctgtgacg	tctgggcttg	gtggaatctc	agggaagcat	7140
ccgtggggtg	gaaggtcatc	gtctggctcg	ttgtttgatg	gttatattac	catgcaattt	7200
tctttgccta	catttgtatt	gaatacatcc	caatctcctt	cctattcggt	gacatgacac	7260
attctatttc	agaaggcttt	gattttatca	agcactttca	tttacttctc	atggcagtgc	7320
ctattacttc	tcttacaata	cccatctgtc	tgctttacca	aaatctattt	cccctttca	7380
gatcctccca	aatggtcctc	ataaactgtc	ctgcctccac	ctagtggtcc	aggtatattt	7440
ccacaatgtt	acatcaacag	gcacttctag	ccattttcct	tctcaaaagg	tgcaaaaagc	7500
aacttcataa	acacaaatta	aatcttcggt	gaggtagtgt	gatgctgctt	cctcccaact	7560
cagcgcactt	cgtcttcctc	attccacaaa	aacccatagc	cttccttcac	tctgcaggac	7620
tagtgctgcc	aagggttcag	ctctacctac	tggtgtgctc	ttttgagcaa	gttgcttagc	7680
ctctctgtaa	cacaaggaca	atagctgcaa	gcatccccaa	agatcattgc	aggagacaat	7740
gactaaggct	accagageeg	caataaaagt	cagtgaattt	tagcgtggtc	ctctctgtct	7800
ctccagaacg	gctgccacgt	ggaattgctc	ttcctccgct	acatctcgga	ctgggaccta	7860
gaccctggcc	gctgctaccg	cgtcacctgg	ttcacctcct	ggagcccctg	ctacgactgt	7920
gcccgacatg	tggccgactt	tctgcgaggg	aaccccaacc	tcagtctgag	gatcttcacc	7980
gcgcgcctct	acttctgtga	ggaccgcaag	gctgagcccg	aggggctgcg	gcggctgcac	8040
cgcgccgggg	tgcaaatagc	catcatgacc	ttcaaaggtg	cgaaagggcc	ttccgcgcag	8100
gcgcagtgca	gcagcccgca	ttcgggattg	cgatgcggaa	tgaatgagtt	agtggggaag	8160
ctcgagggga	agaagtgggc	ggggattctg	gttcacctct	ggagccgaaa	ttaaagatta	8220
gaagcagaga	aaagagtgaa	tggctcagag	acaaggcccc	gaggaaatga	gaaaatgggg	8280
	ttctttcccc					8340
gcctttttt	ccttttttt	ttttttgaag	attatttta	ctgctggaat	acttttgtag	8400
	aagaactttc					8460
	tcggcgcatc					8520
tttctctaca	gtcttttttg	gagtttcgta	tatttcttat	attttcttat	tgttcaatca	8580
_	tcatctgatg			_	_	8640
	tcagagccct					8700
_	tttaaatttc	-				8760
	tttttttt					8820
	cccaatttac		-	-		8880
	gccccaccga					8940
	tacagcccct					9000
	agcaacttcc					9060
	acagtccttc	_	_			9120
	aaaaaatatt					9180
	caggtctggc				-	9240
-	tgggaataac			_		9300
	ttttaggtag					9360
	ttttatatca					9420
	atttttctat			-		9480
	catgatctat					9540
	ccaaagcatt					9600
	gtttgtacaa					9660
catggtcacc	ttcaagctac	tttaataaag	gatcttaaaa	tgggcaggag	gactgtgaac	9720

Ond Cond

```
9780
aagacaccct aataatgggt tgatgtctga agtagcaaat cttctggaaa cgcaaactct
tttaaggaag tccctaattt agaaacaccc acaaacttca catatcataa ttagcaaaca
                                                                      9840
                                                                      9900
attggaagga agttgcttga atgttgggga gaggaaaatc tattggctct cgtgggtctc
ttcatctcag aaatgccaat caggtcaagg tttgctacat tttgtatgtg tgtgatgctt
                                                                      9960
ctcccaaagg tatattaact atataagaga gttgtgacaa aacagaatga taaagctgcg
                                                                     10020
aaccqtqqca cacqctcata qttctaqctq cttqqqqqqt tqaqqqqqa qqatqqcttq
                                                                     10080
aacacaggtg ttcaaggcca gcctgggcaa cataacaaga tcctgtctct caaaaaaaaa
                                                                     10140
aaaaaaaaa agaaagaga agggccgggc gtggtggctc acgcctgtaa tcccagcact
                                                                     10200
ttgggaggcc gagccgggcg gatcacctgt ggtcaggagt ttgagaccag cctggccaac
                                                                     10260
                                                                     10320
atggcaaaac cccgtctgta ctcaaaatgc aaaaattagc caggcgtggt agcaggcacc
tgtaatccca gctacttggg aggctgaggc aggagaatcg cttgaaccca ggaggtggag
                                                                     10380
gttgcagtaa gctgagatcg tgccgttgca ctccagcctg ggcgacaaga gcaagactct
                                                                    10440
qtctcaqaaa aaaaaaaaa aaagagagag agagagaaag agaacaatat ttgggagaga
                                                                    10500
aggatgggga agcattgcaa ggaaattgtg ctttatccaa caaaatgtaa ggagccaata
                                                                     10560
agggatccct atttgtctct tttggtgtct atttgtccct aacaactgtc tttgacagtg
                                                                    10620
agaaaaatat tcagaataac catatccctg tgccgttatt acctagcaac ccttgcaatg
                                                                    10680
aagatgagca gatccacagg aaaacttgaa tgcacaactg tcttatttta atcttattgt
                                                                    10740
                                                                    10800
acataagttt gtaaaagagt taaaaattgt tacttcatgt attcatttat attttatatt
attttgcgtc taatgatttt ttattaacat gatttccttt tctgatatat tgaaatggag
                                                                    10860
tctcaaagct tcataaattt ataactttag aaatgattct aataacaacg tatgtaattg
                                                                    10920
taacattgca gtaatggtgc tacgaagcca tttctcttga tttttagtaa acttttatga
                                                                    10980
cagcaaattt gcttctggct cactttcaat cagttaaata aatgataaat aattttggaa
                                                                    11040
gctgtgaaga taaaatacca aataaaataa tataaaagtg atttatatga agttaaaata
                                                                    11100
aaaaatcagt atgatggaat aaacttgaga gtccagaagt tatcccatac atctgtaatc
                                                                    11160
aactaatttc tcacaagggt gtaaggacca ttcaatggag aaaa
                                                                    11204
```

<210> 36

<211> 229

<212> PRT

<213> Mus musculus

<400> 36

10 Arg Ile Glu Pro His Glu Phe Glu Val Phe Phe Asp Pro Arg Glu Leu 25 20 Arg Lys Glu Thr Cys Leu Leu Tyr Glu Ile Asn Trp Gly Gly Arg His 40 Ser Val Trp Arg His Thr Ser Gln Asn Thr Ser Asn His Val Glu Val Asn Phe Leu Glu Lys Phe Thr Thr Glu Arg Tyr Phe Arg Pro Asn Thr 70 75 Arg Cys Ser Ile Thr Trp Phe Leu Ser Trp Ser Pro Cys Gly Glu Cys 90 Ser Arg Ala Ile Thr Glu Phe Leu Ser Arg His Pro Tyr Val Thr Leu 105 110 100 Phe Ile Tyr Ile Ala Arg Leu Tyr His His Thr Asp Gln Arg Asn Arg 120 Gln Gly Leu Arg Asp Leu Ile Ser Ser Gly Val Thr Ile Gln Ile Met 135 140 Thr Glu Gln Glu Tyr Cys Tyr Cys Trp Arg Asn Phe Val Asn Tyr Pro 150 155 Pro Ser Asn Glu Ala Tyr Trp Pro Arg Tyr Pro His Leu Trp Val Lys 165 170 Leu Tyr Val Leu Glu Leu Tyr Cys Ile Ile Leu Gly Leu Pro Pro Cys 180 185 Leu Lys Ile Leu Arg Arg Lys Gln Pro Gln Leu Thr Phe Phe Thr Ile

Met Ser Ser Glu Thr Gly Pro Val Ala Val Asp Pro Thr Leu Arg Arg

al Curd 195 200 205

Thr Leu Gln Thr Cys His Tyr Gln Arg Ile Pro Pro His Leu Leu Trp
210 215 220

Ala Thr Gly Leu Lys
225